



U.S. Department
of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

SAFO 14004
DATE: 8/21/14

Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: Temporary Loss of Heading and Attitude Display on Garmin-Equipped Installations

Purpose: This SAFO alerts owners, operators, repair stations, and mechanics to the temporary loss of displayed heading and attitude in aircraft equipped with the Garmin GRS 77/77H AHRS (Attitude Heading Reference System).

Background: Garmin has received a limited number of reports of a temporary loss of displayed heading and attitude (provided by the AHRS) by the following products: Garmin G1000, G1000H, G950, G900X, G500, G500H, G600, Cirrus Perspective™, and Embraer Prodigy® Integrated Flight Deck Systems. Garmin issued Service Advisory No. 1309, Revision B on April 4, 2013 advising owners and operators. Garmin continues to investigate the issue and may identify additional future action.

Discussion: Two possible causes identified by Garmin are:

- 1) Moving the aircraft on the ground (e.g., towing operations) during the first 10 seconds after turning on power to the AHRS (when power is applied to a primary flight display (PFD), power is also applied to the associated AHRS);
- 2) Magnetic interference introduced near the magnetometer(s) during AHRS initialization (i.e., during the 60 seconds following power up of the AHRS).

Either of these actions can cause a noticeably drifting heading to be displayed on the PFD prior to takeoff, which may lead to a temporary loss of PFD displayed heading and/or attitude information after takeoff and during climb.

Garmin defines “noticeably drifting heading” as when the displayed PFD heading is continuously turning in one direction at a rate of more than ½ degree per second when the aircraft is stationary.

Note: A constant heading offset on the PFD prior to aircraft movement is not an indication of this condition. This condition does not affect AHRS in-flight restart performance.

Recommended Action: Operators using the products identified above should, as a preventative measure, not move the aircraft on the ground during the first 10 seconds after turning on the pilot's and co-pilot's (if present) PFD(s).

Do not take off if the heading displayed on the PFD is noticeably drifting. When this occurs, powering down and reinitializing the AHRS normally resolves the condition. Observe the 10 second limitation between power up and aircraft movement.

If the conditions described in this SAFO (noticeably drifting heading while on the ground or loss of displayed heading after takeoff) are encountered, please provide the following information to Garmin Aviation Product Support at avionics@garmin.com or 888-606-5482:

- 1) Aircraft location, airport identifier, and location on the field (example, southeast side of main FBO ramp).
- 2) Date and time condition occurred.
- 3) Was the aircraft moved within 10 seconds after turning on the pilot's or co-pilot's PFD?
- 4) Did heading appear to be drifting?
- 5) Did heading drifting occur while on the ground or in flight?
- 6) What was the approximate heading drift rate (i.e., in degrees per second)?
- 7) Was the aircraft stationary or taxiing when heading drifting was observed?
- 8) Approximately how long after valid attitude and heading information was displayed on the PFD was the drifting heading observed?
- 9) Approximately how long after AHRS power up was the heading drifting observed?
- 10) Were any sources of magnetic disturbance within 20 feet of the aircraft while the AHRS was initializing? Sources of magnetic disturbance include: auxiliary power carts, cars, trucks or other vehicles, powered medical equipment, etc.

Contact: Questions or comments regarding this SAFO should be directed to Roger A. Souter, Aerospace Engineer, Wichita ACO; phone: 316-946-4134; e-mail: Roger.Souter@FAA.GOV or contact Garmin International, 1200 East 151st Street, Olathe, KS 66062, phone 913-393-8200, fax 913-397-8282.